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Job No.: CECTC/BBMP/KRIDL/W.No.14/GSB-1/AL/2017-18 Date : 22.05.2017

ATTERBERG LIMITS TEST FOR GSB (COARSE GRADED)
IS : 2720 (Part - 5)

Client : **Executive Engineer,** Dasarahalli Division, BBMP, Bangalore.

Agency : **Technical Manager (West),** KRIDL, BBMP, Bangalore.

Name of work : Improvements to 10th cross, 4th, 5th, 6th main roads at Havnoor layout in Bagalagunte in Ward No.14, BBMP, Bangalore.

Date of Testing : 22.05.2017

As per MORTH Table : 400-01

Sl. No.	Particulars	Test Results	Standards as per Specifications
1	Liquid Limit, %	21.45	25.0% Maximum.
2	Plasticity Index, %	Non Plastic	6.0% Maximum.

Note:
1. The report shall not be reproduced, except in full, without the written approval of the laboratory.
2. The results indicated above are based on the tests carried out on the samples received in the laboratory.
3. Any Query regarding the report must be reported within 30 days from the date of testing.

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Job No.: CECTC/BBMP/KRIDL/W.No.14/WMM/AL/2017-18 Date: : 31.05.2017

ATTERBERG LIMITS TEST FOR WMM
MORTH TABLE-400-11

Client : **Executive Engineer,** Dasarahalli Division, BBMP, Bangalore.
Agency : **Technical Manager (West),** KRIDL, BBMP, Bangalore.
Name of Work : Improvements to 10th cross, 4th, 5th, 6th main roads at Havnoor layout in Bagalagunte in Ward No.14, BBMP, Bangalore.

Date of Testing : 31.05.2017
Material : Wet Mix Macadam
Sample Location : WMM Mix Plant

As per MORTH Table 400-11

Sl. No.	Particulars	Test Results	Standards as per Specifications
1	Liquid Limit	21.65	-
2	Plasticity Index, %	Non Plastic	6.0% Maximum.

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Job No.: CECTC/BBMP/KRIDL/W.No.14/BM/Shape/2017-18

Date: 06.06.2017

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Client	**Executive Engineer,** Dasarahalli Division, BBMP, Bangalore.
Agency	**Technical Manager(West),** KRIDL, BBMP, Bangalore.
Name of Work	Improvements to 10th cross, 4th, 5th, 6th main roads at Havnoor layout in Bagalagunte in Ward No.14, BBMP, Bangalore.
Technical Reference	IS 2386(Part 1) 1963 (RA 2007)
Type of Mix	Bituminious Macadum
Date of Testing	06.06.2017

Passing through IS Sieve, mm	Retained On IS Sieve, mm	Weight of Sieved Fraction (W) gms		Proportion of Size range in the sample, X = 100xW/ΣW		Weight of 200 pieces of aggregates of the range, (P) in gms		Thickness gauge size, mm	Weight of flaky particles (F)in gms		Percentage by Weight of flaky aggregates in gms Y= 100xF/P	Weighed Percentage of flaky aggregates in gms XY=X × Y	Weight of fraction consisting of at least 200 Pieces in gms		Length gauge size in mm	Weight of aggregates in each fraction retained on Length gauge in gms	
63.00	50.00	W1		X1		P1		33.90	F1				P1		-	E1	
50.00	40.00	W2		X2		P2		27.00	F2				P2		81.00	E2	
40.00	31.50	W3		X3		P3		21.50	F3				P3		58.00	E3	
31.50	25.00	W4	3385.0	X4	33.51	P4	3240.0	16.95	F4	275.0	8.5	284.41	P4	-	-	E4	-
25.00	20.00	W5	2480.0	X5	24.55	P5	2240.0	13.50	F5	260.0	11.61	284.95	P5	2240.0	40.50	E5	235.0
20.00	16.00	W6	1580.0	X6	15.64	P6	1902.0	10.80	F6	235.0	12.36	193.24	P6	1902.0	32.40	E6	189.0
16.00	12.50	W7	1385.0	X7	13.71	P7	1250.0	8.55	F7	185.0	14.80	202.91	P7	1250.0	25.50	E7	130.0
12.50	10.00	W8	932.0	X8	9.23	P8	625.0	6.75	F8	164.0	26.24	242.09	P8	625.0	20.20	E8	94.0
10.00	6.30	W9	340.0	X9	3.37	P9	335.0	4.89	F9	96.0	28.66	96.45	P9	335.0	14.70	E9	88.0
		Σ W	**10102.0**									**ΣXY 1304.05**	**ΣP**	**6352.0**		**ΣE**	**736.0**

Flakiness Index = **13.04%**

Elongation Index = **11.59%**

Result : Combined Flakiness & Elongation index **24.63%**

Comments: Maximum allowable Combined flakiness and Elongation indices value for Bituminous Macadam is 35%.

Note:

→ The results indicated above are based on the tests carried out on the samples received in the laboratory.

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Job No.: CECTC/BBMP/KRIDL/W.No.14/BC/AGG/2017-18 09.06.2017

Aggregate Gradation Test
IS : 2386 Part I

Client	**Executive Engineer,** Dasarahalli Division, BBMP, Bangalore.
Agency	**Technical Manager (West),** KRIDL, BBMP, Bangalore.
Name of the Work	Improvements to 10th cross, 4th, 5th, 6th main roads at Havnoor layout in Bagalagunte in Ward No.14, BBMP, Bangalore.
Sample I / D	Hot Mix Plant, Bangalore
Type of Mix	Bituminous Concrete
Date of Testing	09.06.2017

Total Weight of Sample: **5450** gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	JOBMIX Gradation as per MORTH	Remarks
19	0	0	0	100	100	Gradation satisfies Bituminous concrete Grade-II specification as per MORTH
13.2	538	9.87	9.87	90.13	79 - 100	
9.5	574	10.53	20.40	79.60	70 - 88	
4.75	720	13.21	33.61	66.39	53 - 71	
2.36	662	12.15	45.76	54.24	42 - 58	
1.18	652	11.96	57.72	42.28	34 - 48	
0.600	624	11.45	69.17	30.83	26 - 38	
0.300	632	11.60	80.77	19.23	18 - 28	
0.150	325	5.96	86.73	13.27	12 - 20	
0.075	421	7.72	94.46	5.54	4 - 10	

Total Weight of Sample: **4800** gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	JOBMIX Gradation as per MORTH	Remarks
19	0	0	0	100	100	Gradation satisfies Bituminous concrete Grade-II specification as per MORTH
13.2	646	13.46	13.46	86.54	79 - 100	
9.5	490	10.21	23.67	76.33	70 - 88	
4.75	638	13.29	36.96	63.04	53 - 71	
2.36	525	10.94	47.90	52.10	42 - 58	
1.18	654	13.63	61.52	38.48	34 - 48	
0.600	529	11.02	72.54	27.46	26 - 38	
0.300	375	7.81	80.35	19.65	18 - 28	
0.150	336	7.00	87.35	12.65	12 - 20	
0.075	330	6.88	94.23	5.77	4 - 10	

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Job No.: CECTC/BBMP/KRIDL/W.No.14/BC/Sta/2017-18 09.06.2017

TEST REPORT ON STABILITY OF MIX

Client	:	**Executive Engineer,** Dasarahalli Division, BBMP, Bangalore.
Agency	:	**Technical Manager (West),** KRIDL, BBMP, Bangalore.
Name of the Work	:	Improvements to 10th cross, 4th, 5th, 6th main roads at Havnoor layout in Bagalagunte in Ward No.14, BBMP, Bangalore.
Source of location	:	Hot mix Plant, Bangalore
Type of Mix	:	Bituminous Concrete
Date of Testing	:	09.06.2017

The results of the tests conducted on the Bituminous Concrete mix sample are as follows:

Sl. No	Description	Test Result 1	Test Result 2	Requirement as per MORTH (Table 500-19)
1	Marshal Stability, Kn	10.20	10.25	9 Kn (min)
2	Marshal flow, mm	2.40	3.25	2 – 4
3	Percent air voids in Mineral Aggregate	13.40	14.30	13 – 15
4	Voids in Compacted Mix	4.25	4.60	3 – 6
5	Percent Voids filled with Bitumen	70.86	71.65	65 - 75
6	Density, g/cc	2.26	2.27	--

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